

Article

## Situation on Parasitic Diseases in Samarkand Region

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**Abstract:** This study examines the current situation of parasitic diseases in the Samarkand region, highlighting a significant knowledge gap in understanding the regional prevalence and impact of helminth infections. The research employs data from the Republican and Samarkand Regional Centers for State Sanitary and Epidemiological Surveillance, along with medical history reviews and studies of parasitic incidence in children. Findings reveal that helminthiases are highly prevalent, particularly among children, with specific regions like Nurabad and Urgut showing alarming infection rates. The results underscore the need for targeted health interventions and policy measures to address this public health challenge, emphasizing the critical role of environmental factors in disease spread and resistance.

**Keywords:** parasitic diseases, prevalence, enterobiasis, hymenolepiasis, leishmaniasis, malaria, epidemiological situation

### 1. Introduction

Parasitic diseases occur in virtually all countries of the world, and in many regions their prevalence reaches very high levels. According to WHO, up to 4.5 million cases are registered annually in the world [6].

Helminths cause a variety of pathological changes in the host's body. They mechanically affect surrounding organs and tissues, cause intoxication and sensitization of macroorganisms with the products of their own metabolism, absorb nutrients and blood, and disrupt the vitamin balance. Often, helminths aggravate the course of other diseases, having an adverse effect on the formation and state of immunity to infectious diseases (immunosuppressive effect), and promote the penetration of infectious agents into the host tissues [1].

Improvement of children's health from helminth infections will contribute to success in the fight against a number of infectious and somatic diseases, for which invasion is an aggravating factor [5].

These diseases contribute to poor health and well-being of the world's poor. (WHO. Report of the third global meeting of the partners for parasite control. Deworming for Health and Development Geneva, 29-30 November 2004). The resolution of this meeting noted that the negative impact of diseases caused by parasites on the health and social development of society is comparable to the impact of diseases such as tuberculosis, malaria and HIV/AIDS. It was recognized that the main risk group for such diseases are children of school and younger ages [5, 6].

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Helminthiasis is widespread throughout the world. According to WHO. More than 20% of the world's population is infected with helminths, of which 644.4 million are roundworms and 335.1 million are whipworms. In Europe, 32 million are infested with roundworms, 34 million whipworms, 62 million pinworms [3].

About 65 species of helminths are registered in the CIS countries, of which 18-20 species are frequently encountered and are of medical importance [2,3]. Parasitic diseases are one of the most common diseases in Uzbekistan. Every year, about 300 thousand patients with helminthiasis are registered in the republic. In 2015, helminthiasis accounted for 89.5% of all parasitic morbidity in the republic. Enterobiasis, hymenolepiasis, ascariasis, trichuriasis, and teniarinchirosis are widespread. The true number of patients with parasitosis exceeds official statistics several times [4].

The prevalence of individual helminth species varies by region. Enterobiasis and hymenolepidosis are widespread. Foci of ascariasis are registered in the mountain foothills of the Fergana, Namangan and Surkhandarya regions.

Uzbekistan is one of the regions where echinococcosis is endemic. According to the authors, in recent years in the republic there has been a clear tendency towards an increase in the incidence of echinococcosis [4].

Despite the fact that in the Republic much attention is paid to carrying out planned antiparasitic measures, parasitic diseases occupy a significant share in regional human pathology and are an urgent problem in science and healthcare practice in the Republic.

Purpose of the study to study the current situation on parasitic diseases in the Samarkand region in 2020.

## 2. Materials and Methods

The methodology of this study was designed to comprehensively assess the prevalence and distribution of parasitic diseases in the Samarkand region, with a particular focus on helminth infections. The research utilized a combination of quantitative and qualitative data sources, primarily drawing on reports from the Republican Center for State Sanitary and Epidemiological Surveillance and the Samarkand Regional Center for State Sanitary and Epidemiological Surveillance. These reports provided detailed information on the incidence of parasitic diseases across various districts, offering a broad overview of the regional situation.

Additionally, medical histories of patients were reviewed to gather specific case data, particularly focusing on children, who represent the most affected demographic group. A targeted study was also conducted on the incidence of intestinal parasitosis among children in various educational institutions in Samarkand, allowing for a more granular analysis of infection rates. The data collected from these sources were analyzed to identify patterns of disease prevalence, with particular attention given to environmental factors such as climate, water supply, and air quality, which are known to influence the spread of parasitic diseases. Statistical analysis was employed to quantify the prevalence rates and to establish correlations between environmental factors and disease incidence. The methodological approach ensured a comprehensive understanding of the parasitic disease landscape in the region, enabling the identification of critical areas for intervention and the development of informed public health strategies to mitigate the impact of these diseases on the population, particularly among children.

### 3. Results

The Samarkand region is located in the central part of Uzbekistan, in the Zeravshan Valley (the basin of the middle reaches of the Zeravshan River).

The region borders in the northwest with Navoi, in the east with Jizzakh, in the south with Kashkadarya regions and in the southeast with Tajikistan. The territory of the region is 16.8 thousand square kilometers, which is 3.8% of the total territory of the Republic of Uzbekistan. The population of the region is 2.78 million people, incl. rural population - 2.06 million and urban - 0.72 million people, population density 165 people per 1 km<sup>2</sup>.

It should also be added to the general characteristics that the Samarkand region is the oldest region of sericulture, tobacco growing and viticulture. In addition to sheep farming, other types of livestock farming have also developed here.

The total irrigated area of the region is 376.7 thousand hectares, incl. 255.6 thousand hectares are used for agricultural purposes, pastures - 796.7 thousand hectares, household plots - 62.4 thousand hectares, perennial plantings - 53.3 thousand hectares.

The climate of the Samarkand region is one of the most important components of nature and is of significant scientific interest in regional helminthology.

The duration of survival of helminth eggs in the external environment and the prevalence of helminthiasis in various natural and climatic conditions are directly related to the climatic characteristics and geographical location of areas according to geographical and thermal.

In terms of conditions, as well as in terms of moisture regime, the territory of the Samarkand region belongs to the zone of extratropical deserts with a long duration of sunshine, dry hot summers, and humid and moderately mild winters.

A distinctive feature of the climate of the region is its clearly expressed continentality, manifested in various fluctuations of meteorological elements, both in the inter-seasonal, and in the annual and daily variations. The most important thing in a continental climate is the annual amplitude of air temperature - the difference between the temperatures of the hottest and coldest months.

The minimum air temperature according to long-term data is - 25.40°C. The maximum temperature in summer reaches +40°C. The main source of drinking water supply for the city of Samarkand and the regions of the region is groundwater. There are 17 municipal water supply facilities in the region that provide water to the city and districts of the region.

Centralized water supply covers 81% of the region's population. The average water consumption per inhabitant in the region is 315 l/day.

There are 5 sewage treatment plants in the region with a total capacity of 58.9 million m<sup>3</sup> of water per year. Including: in Samarkand - 51.4 million m<sup>3</sup>/year, covering 64.5% of the population; in the city of Kattakurgan - 7.2 million m<sup>3</sup>/year and 55.9%, respectively; in Bulungur - 0.25 million m<sup>3</sup>/year and 3.2%. There are no treatment facilities in other settlements and areas.

The influence of natural factors on the epidemic process of helminthiasis. It is known that helminthiasis are more common in countries with warm climates. The further north the area, the less common it is. This fact indicates a significant influence of natural conditions on the course of the epidemic process in hymenolepiasis.

Poor air composition (Nurabad and Ishtykhan regions) and poor water supply (Kattakurgan region) reduce the body's defenses and contribute to the spread of intestinal parasitosis.

In the Samarkand region, helminthiasis are the most common parasitic diseases. An analysis of the incidence of helminthiasis in the regions for 2020 shows that helminthiasis is the most common; 6228 (intensive indicator 18.1) infested cases were identified. Of these,

the most common are enterobiasis, hemonolepiasis, ascariasis, teniarinchiasis and echinococcosis. Among those infected with helminth infections, children under 14 years old accounted for 89.8%. Among the infected children, enterobiasis was detected in 4498 (92.1%), hymenolepiasis in 1169 (83.9).

The incidence of helminthiasis in children in schools was 40.1%, of which 94.8% were primary school students. Among preschool children, the incidence of enterobiasis was up to 35.5%, and hymenolepidosis - 6.9% after three examinations.

In 26.2% of infected people, mixed parasitic infestation occurs: a combination of helminthiasis with giardiasis (enterobiasis + giardiasis; giardiasis + hymenolepiasis).

#### 4. Discussion

An analysis of the incidence of helminthiasis in the districts of the Samarkand region showed that the largest number of children aged 2-14 years infected with helminthiasis in 2020 was identified in the Nurabad district - 1153 people, in the Samarkand district - 461 people, in the Payaryk district - 440 people, in the Urgut district - 1113 people. The smallest number of infested people was identified in the city of Kattakurgan - 130 people, in the Kattakurgan region - 144 people, in the Pastdargom region - 144 people.

In 2020, not a single case of trichuriasis was detected in the region. Ascariasis was detected in only one patient from the Dzhambai region.

By region, cases of leishmaniasis were registered: 39 people in 2019, 19 people in 2020. Of these, 6 people suffer from visceral leishmaniasis; children from the Urgut region suffer. These were mostly children under 5 years old. The remaining patients had cutaneous leishmaniasis. Among the identified protozoa, giardiasis was registered in 1326 people, of which 1225 were in children aged 2-14 years, which amounted to 19.7% of all infected.

#### 5. Conclusion

The findings of this study reveal a concerning prevalence of parasitic diseases, particularly helminth infections, in the Samarkand region, with children being the most affected demographic. The analysis highlights the significant influence of environmental factors, such as climate and water quality, on the spread and persistence of these diseases. The study underscores the urgent need for targeted public health interventions to address the high infection rates, particularly in vulnerable regions like Nurabad and Urgut. The implications of these findings suggest that improving environmental conditions, alongside enhancing healthcare services, is crucial for reducing the burden of parasitic diseases in the region. Further research is recommended to explore the long-term impact of these interventions and to develop more effective strategies for disease prevention and control, particularly in the context of changing environmental conditions and their impact on public health.

#### REFERENCES

- [1] N. S. Bobyreva, Y. A. Korneeva, and G. N. Degteva, "Analysis of Parasitic Diseases Incidence in the Nenets Autonomous Okrug," *Hygiene and Sanitation*, vol. 95, no. 2, pp. 157-162, 2016.

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- [2] L. U. Anvarova and L. B. Makhmudova, "Features of the Distribution, Diagnosis, Clinics, and Treatment of Intestinal Nematodoses at the Present Stage," *News of Dermatovenereology and Reproductive Health, Central Asian Scientific and Practical Journal*, no. 1-2, pp. 31-33, 2022.
- [3] A. B. Khodzhayan and S. S. Kozlov, *Medical Parasitology and Parasitic Diseases: A Study Guide*, 2014.
- [4] WHO, "Report of the Third Global Meeting of the Partners for Parasite Control: Deworming for Health and Development," Geneva, 29-30 November 2004.
- [5] N. Y. Miropolskaya, "Influence of Intestinal Parasitic Diseases on the Somatic Health Status of Children," *Far Eastern Journal of Infectious Pathology*, no. 29, pp. 101-104, 2015.
- [6] M. R. Baratova et al., "Determination of the Type Composition of Single-Celled Internal Parasites Among Primary School Students of Samarkand Regional Schools," 2021.
- [7] V. S. Turitsyn et al., "Study of the Parasite Fauna of Dogs in Samarkand and Their Epidemiological Significance," *Scientific Support for the Development of Agro-Industrial Complex Under Import Substitution Conditions*, 2019.
- [8] H. G. Sattarova et al., "Features of the Use of Enzyme-Linked Immunosorbent Assay in the Diagnosis of Echinococcosis," *Society and Innovation*, pp. 598-603, 2020.
- [9] D. B. Saidakhmedova, K. M. Khalikov, L. V. Kachugina, H. G. Sattarova, and G. H. Usarov, "Analysis of Intestinal Parasitic Diseases Among Schoolchildren in the Gallaaral District of Jizzakh Region," *Problems of Biology and Medicine*, pp. 342-345, 2023.
- [10] O. Achilova, U. Suvonkulov, T. Muratov, Z. Sadikov, and H. Sattarova, "Relevance of Intestinal Invasions in Children in the Modern World," *Journal of the Medical Bulletin*, vol. 4, no. 2, pp. 118-122, 2018.
- [11] Z. Yu. Sadikov et al., "Factors Underlying the Spread of Echinococcosis in Central Asia," *New Horizons in Harmful Organism Science*, Busan Port International Exhibition & Convention Center, Busan, Korea, April 24-27, 2019.
- [12] H. G. Sattarova, Q. M. Khalikov, G. H. Usarov, and J. Z. Fazliddinov, "Use of Local Antigens in the Immunodiagnosis of Echinococcosis," in *Proc. Int. Sci.-Pract. Conf. Actual Problems of Infectology, Epidemiology, and Parasitology*, pp. 116, 2022.
- [13] H. G. Sattarova, Q. M. Khalikov, U. T. Suvonkulov, and G. H. Usarov, "Principles of the Use of Antigens in the Immunity Diagnosis of Echinococcosis Disease," *Thematics Journal of Social Sciences*, vol. 4, no. 8, 2022.
- [14] K. M. Khalikov, H. G. Sattarova, G. H. Usarov, and Z. A. Saidmurodova, "Comparative Analysis of the Effectiveness of Two Serological Methods for the Diagnosis of Echinococcosis," *Biotechnology and Biomedical Engineering*, pp. 218-222.
- [15] D. S. Williams, "Hydatid Cysts of the Lung and Liver," *Journal of Insurance Medicine*, vol. 45, no. 1, pp. 58-60, 2015.